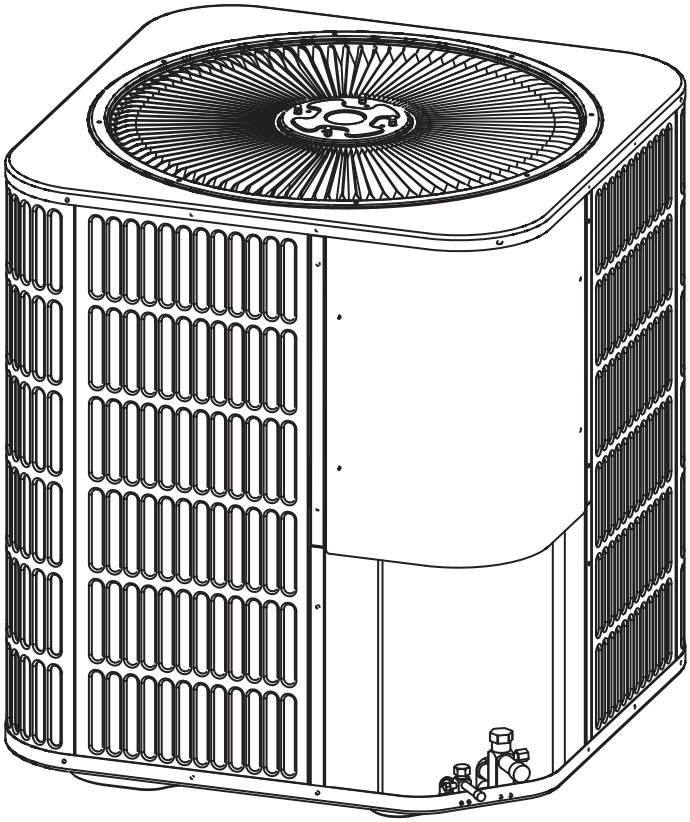
INSTALLATION INSTRUCTIONS

13 SEER SERIES
Split System Heat Pump & Air Conditioner
1.5-5 Tons

DiamondAir



NOTE: Appearance of unit may vary.

RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION

WARNING

These instructions are intended as an aid to qualified licensed service personnel for proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.

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DO NOT DESTROY THIS MANUAL
Please read carefully and keep in a safe place for future reference by a serviceman.

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This document is customer property and is to remain with this unit.
These instructions do not cover all the different variations of systems nor does it provide for every possible contingency to be met in connection with installation.
All phases of this installation must comply with NATIONAL STATE AND LOCAL CODES. If additional information is required please contact your local distributor.

1.0 SAFETY

This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

This is an attention alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

Understand and pay particular attention to the signal words DANGER, WARNING, or CAUTION.

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation, which, if not avoided may result in minor or moderate injury. It is also used to alert against unsafe practices and hazards involving only property damage.

WARNING

Improper installation may create a condition where the operation of the product could cause personal injury or property damage.
Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for assistance or for additional information, consult a qualified contractor, installer or service agency.

CAUTION

This product must be installed in strict compliance with the installation instructions and any applicable local, state, and national codes including, but not limited to building, electrical, and mechanical codes.

WARNING

FIRE OR ELECTRICAL HAZARD
Failure to follow the safety warnings exactly could result in serious injury, death or property damage.
A fire or electrical hazard may result causing property damage, personal injury or loss of life.

1.1 INSPECTION

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's delivery receipt. A separate request for inspection by the carrier's agent should be made in writing. See Local distributor for more information.

Requirements For Installing/Servicing R410A Equipment

- Gauge sets, hoses, refrigerant containers, and recovery system must be designed to handle the POE or PVE type oils.
- Manifold sets should be 800 PSIG high side and 250 PSIG low side with 550 PSIG low side restart.
- All hoses must have a 700 PSIG service pressure rating.
- Leak detectors should be designed to detect refrigerant.
- Recovery equipment (including refrigerant recovery containers) must be specifically designed to handle R410A.
- **Do not use an R-22 TXV.**
- A liquid-line filter drier is required on every unit. see the Fig.1

1.2 LIMITATIONS

The unit should be installed in accordance with all National, State and Local Safety Codes and the limitations listed below:

1.Limitations for the indoor unit, coil and appropriate accessories must also be observed.
2.The outdoor unit must not be installed with any duct work in the air stream. The outdoor fan is the propeller type and is not designed to operate against any additional external static pressure.
3.The maximum and minimum conditions for operation must be observed to assure a system that will give maximum performance with minimum service.
4.This unit is not designed to operate with a low ambient kit. Do not modify the control system to operate with any kind of low ambient kit.
5.The maximum allowable line length for this product is 150 feet（Just for Scroll compressor）.

2.0 GENERAL

The outdoor units are designed to be connected to a matching indoor coil with sweat connect lines. Sweat connect units are factory charged with refrigerant for a matching indoor coil plus 25 feet of field supplied lines.

Matching indoor coils are available with a thermostatic expansion valve or an orifice for the most common usage. The orifice size and/or refrigerant charge may need to be changed for some indoor-outdoor unit combinations, elevation differences or total line lengths.

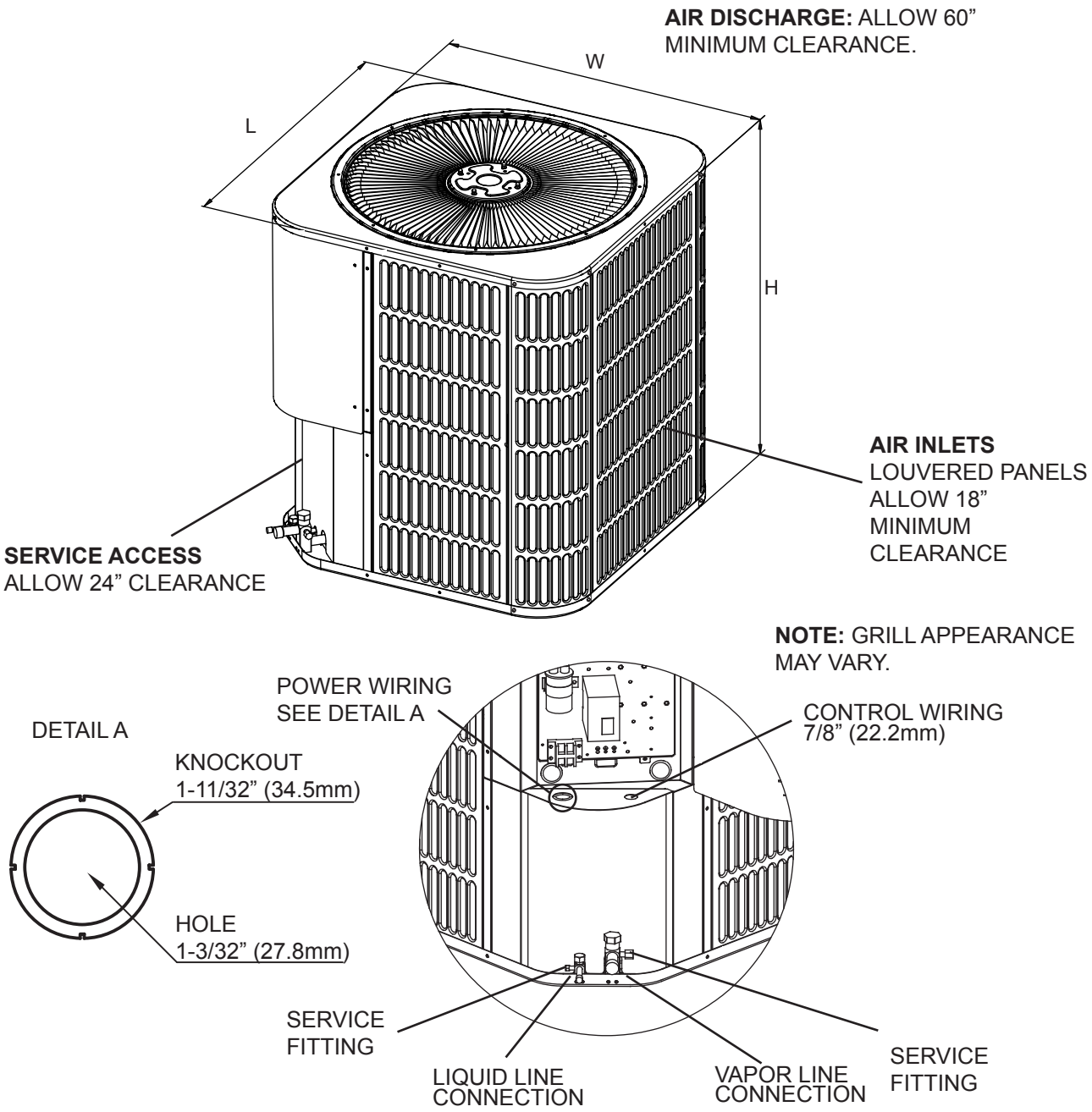


FIG.2 DIMENSIONS

DIMENSIONAL DATA

Unit Model (Btu/h)	Dimensions (Inches)			Refrigerant Connection Service Valve Size	
	"H" in [mm]	"W" in [mm]	"L" in [mm]	Liquid in	Vapor in
18(cooling unit)	24-15/16[633]	21-7/8[554]	21-7/8[554]	3/8	3/4
18(heat pump unit)	24-15/16[633]	23-5/8[600]	23-5/8[600]	3/8	3/4
24	24-15/16[633]	23-5/8[600]	23-5/8[600]	3/8	3/4
30	24-15/16[633]	28[710]	28[710]	3/8	3/4
36	24-15/16[633]	29-1/8[740]	29-1/8[740]	3/8	3/4
42	29-7/8[759]	28[710]	28[710]	3/8	3/4
48	33-3/16[843]	28[710]	28[710]	3/8	7/8
60	33-3/16[843]	29-1/8[740]	29-1/8[740]	3/8	7/8

3.0 UNIT INSTALLATION

3.1 LOCATION

Before starting the installation, select and check the suitability of the location for both the indoor and outdoor unit. Observe all limitations and clearance requirements. The outdoor unit must have sufficient clearance for air entrance to the condenser coil, for air discharge and for service access. See Fig.2

NOTE

For multiple unit installations, units must be spaced a minimum of 18 inches apart. (Coil face to coil face.)

If the unit is to be installed on a hot sun exposed roof or a black-topped ground area, the unit should be raised sufficiently above the roof or ground to avoid taking the accumulated layer of hot air into the outdoor unit.

Provide an adequate structural support.

3.2 GROUND INSTALLATION

The unit may be installed at ground level on a solid base that will not shift or settle, causing strain on the refrigerant lines and possible leaks. Maintain the clearances shown in Fig.2 and install the unit in a level position.

Normal operating sound levels may be objectionable if the unit is placed directly under windows of certain rooms (bedrooms, study, etc.).
Top of unit discharge area must be unrestricted for at least 60 inches above the unit.

WARNING

The outdoor unit should not be installed in an area where mud or ice could cause personal injury.

Elevate the unit sufficiently to prevent any blockage of the air entrances by snow in areas where there will be snow accumulation. Check the local weather bureau for the expected snow accumulation in your area. Isolate the unit from rain gutters to avoid any possible wash out of the foundation.

3.3 ROOF INSTALLATION

When installing units on a roof, the structure must be capable of supporting the total weight of the unit, including a padded frame unit, rails, etc., which should be used to minimize the transmission of sound or vibration into the conditioned space.

3.4 UNIT PLACEMENT

1. Provide a base in the pre-determined location.
2. Remove the shipping carton and inspect for possible damage.
3. Compressor tie-down bolts should remain tightened.
4. Position the unit on the base provided.

CAUTION

This system uses R410A refrigerant which operates at higher pressure than R-22. No other refrigerant may be used in this system. Gauge sets, hoses, refrigerant containers, and recovery system must be designed to handle R410A. If you are unsure, consult the equipment manufacturer.

The outdoor unit must be connected to the indoor coil using field supplied refrigerant grade copper tubing that is internally clean and dry. Units should be installed only with the tubing sizes for approved system combinations. The charge given is applicable for total tubing lengths up to 25 feet.

NOTE

Using a larger than specified line size could result in oil return problems. Using too small a line will result in loss of capacity and other problems caused by insufficient refrigerant flow. Slope horizontal vapor lines at least 1" every 20 feet toward the outdoor unit to facilitate proper oil return.

3.5 PRECAUTIONS DURING LINE INSTALLATION

1. Install the lines with as few bends as possible. Care must be taken not to damage the couplings or kink the tubing. Use clean hard drawn Copper tubing where no appreciable amount of bending around obstruction is necessary, if soft copper must be used, care must be taken to avoid sharp bends which may cause a restriction.

2. The lines should be installed so that they will not obstruct service access to the coil, air handling system or filter.

3. Care must also be taken to isolate the refrigerant lines to minimize noise transmission from the equipment to the structure.

4. The vapor line and liquid line must be insulated with a minimum of 1/2" foam rubber insulation (Armafiex or equivalent). Tape and suspend the refrigerant lines as shown. DO NOT allow tube metal-to-metal contact. See Fig. 3.

5. Use PVC piping as a conduit for all underground installations as shown in Fig. 4. Buried lines should be kept as short as possible to minimize the build up of liquid refrigerant in the vapor line during long periods of shutdown.

6. Pack fiberglass insulation and a sealing material such as perma gum around refrigerant lines where they penetrate a wall to reduce vibration and to retain some flexibility.

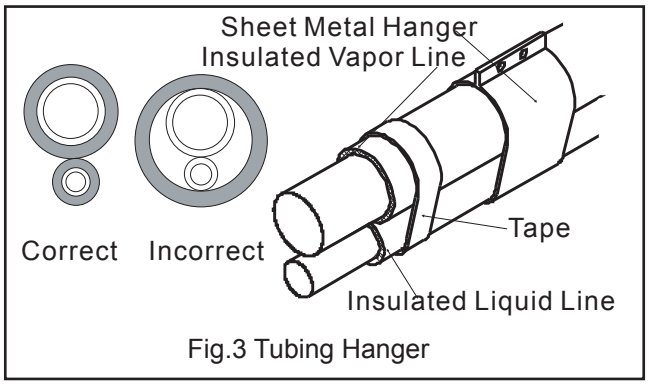


Fig.3 Tubing Hanger

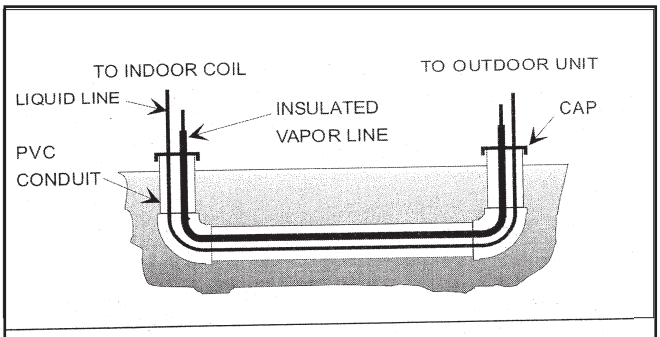
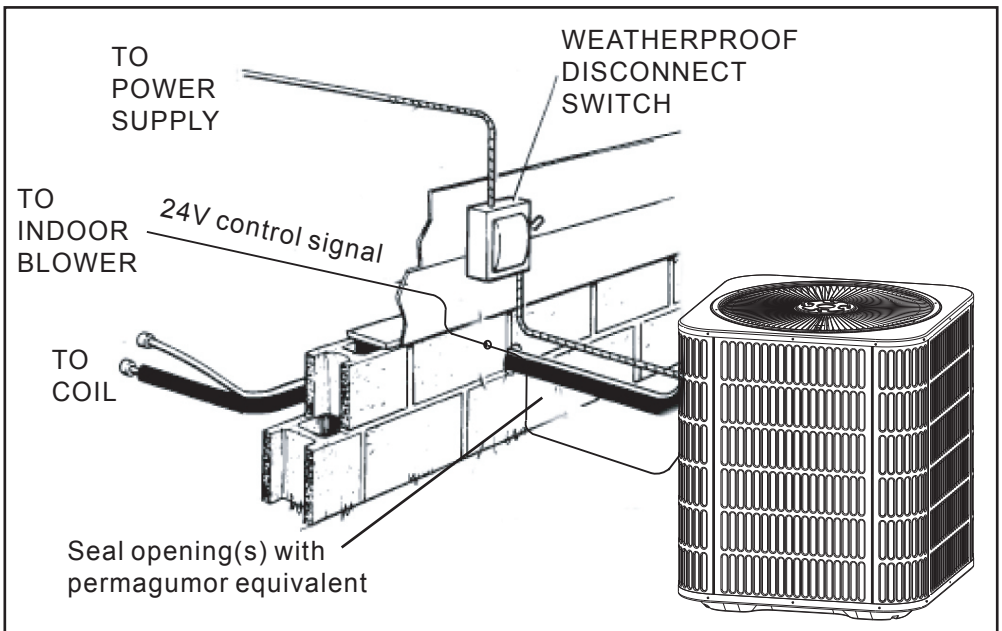


Fig.4 Underground Installation



NOTE:All outdoor wiring must be weather proof

Fig.5 Typical Installtion

3.6 PRECAUTIONS DURING BRAZING OF LINES

All outdoor unit and evaporator coil connections are copper-to-copper and should be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. DO NOT use soft solder. The outdoor units have reusable service valves on both the liquid and vapor connections. The total system refrigerant charge is retained within the outdoor unit during shipping and installation. The reusable service valves are provided to evacuate and charge per this instruction.

Serious service problems can be avoided by taking adequate precautions to assure an internally clean and dry system.

CAUTION

Dry nitrogen should always be supplied through the tubing while it is being brazed, because the temperature required is high enough to cause oxidation of the copper unless an inert atmosphere is provide. The flow of dry nitrogen should continue until the joint has cooled. Always use a pressure regulator and safety valve to insure that only low pressure dry nitrogen is introduced into the tubing.Only a small flow is necessary to displace air and prevent oxidation.

3.7 PRECAUTIONS DURING BRAZING SERVICE VALVE

Precautions should be taken to prevent heat damage to service valve by wrapping a wet rag around it as shown in Fig. 6. Also, protect all painted surfaces, insulation, during brazing. After brazing cool joint with wet rag.

Valve can be opened by removing the plunger cap and fully inserting a hex wrench into the stem and backing out counter-clockwise until valve stem just touches the chamfered retaining wall.

Connect the refrigerant lines using the following procedure:

1. Remove the cap and Schrader core from both the liquid and vapor service valve service ports at the outdoor unit. Connect low pressure nitrogen to the liquid line service port.

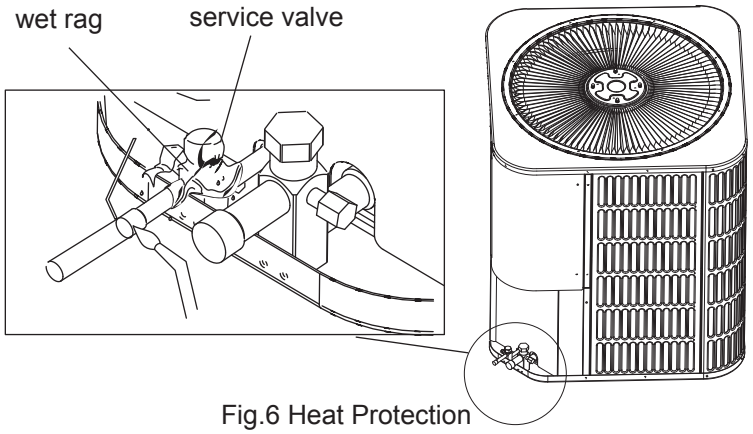


Fig.6 Heat Protection

2. Braze the liquid line to the liquid valve at the outdoor unit. Be sure to wrap the valve body with a wet rag. Allow the nitrogen to continue flowing. Refer to the Tabular Data Sheet for proper liquid line sizing.
3. Carefully remove the rubber plugs from the evaporator liquid and vapor connections at the indoor coil.
4. Braze the liquid line to the evaporator liquid connection. Nitrogen should be flowing through the evaporator coil.
5. Slide the plastie cap away from the vapor connection at the indoor coil. Braze the vapor line to the evaporator vapor connection. Refer to the Table 1 for proper vapor line sizing.
6. Protect the vapor valve with a wet rag and braze the vapor line connection to the outdoor unit. The nitrogen flow should be exiting the system from the vapor service port connection. After this connection has cooled, remove the nitrogen source from the liquid fitting service port.
7. Replace the Schrader core in the liquid and vapor valves.
8. Leak test all refrigerant piping connections including the service port flare caps to be sure they are leak tight. **DO NOT OVER TIGHTEN (between 40 and 60 inch -lbs. maximum).**
9. Evacuate the vapor line, evaporator and the liquid line, to 500 microns or less.

Table 1: Refrigerant Connections and Recommended Liquid and Vapor Tube Diameters (In.)

UNIT SIZE	LIQUID Tube Diameter	VAPOR Tube Diameter	LIQUID (LONG-LINE) Tube Diameter
18	3/8	3/4	3/8
24	3/8	3/4	3/8
30	3/8	3/4	3/8
36	3/8	3/4	3/8
42	3/8	3/4	3/8
48	3/8	7/8	3/8
60	3/8	7/8	3/8

10. Replace cap on service ports. Do not remove the flare caps from the service ports except when necessary for servicing the system.

CAUTION

Do not connect manifold gauges unless trouble is suspected. Approximately 3/4 ounce of refrigerant will be lost each time a standard manifold gauge is connected.

11. Release the refrigerant charge into the system. Open both the liquid and vapor valves by removing the plunger cap and with an hex wrench back out counter -clockwise until valve stem just touches the chamfered retaining wall.
12. Replace plunger cap finger tight, then tighten an additional 1/12 turn (1/2 hex flat). Cap must be replaced to prevent leaks.

WARNING

Never attempt to repair any brazed connections while the system is under pressure. Personal injury could result.

See "System Charge" section for checking and recording system charge.

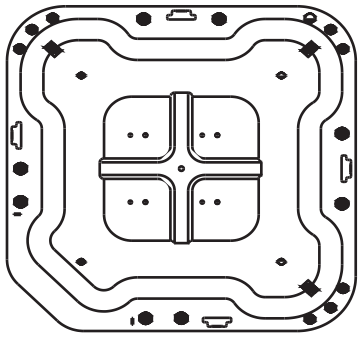
3.8 UNIT MOUNTING

If elevating the heat pump, either on a flat roof or on a slab, observe the following guidelines.

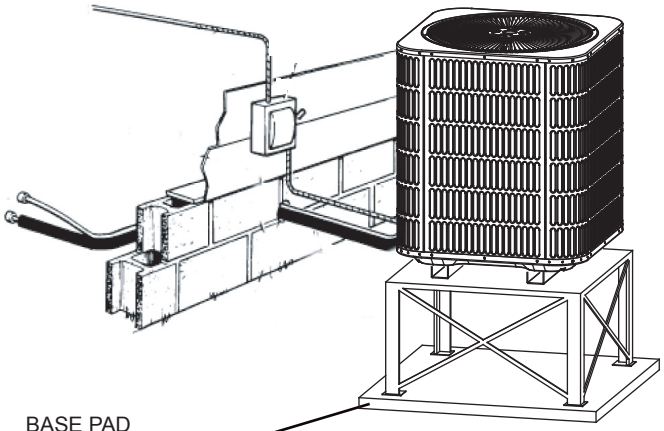
1.The base pan provided elevates the heat pump 2" above the base pad.

2. If elevating a unit on a flat roof , use 4"× 4"(or equivalent) stringers positioned to distribute unit weight evenly and prevent noise and vibration (See fig.7) .
NOTE:Do not block drain openings shown in fig.7.

3. If unit must be elevated because of anticipated snow fall, secure unit and elevating stand such that unit and/or stand will not tip over or fall off.
NOTE: To tie down unit, see 3.9.



BASE PAN (BOTTOM VIEW) DO NOT OBSTRUCT DRAIN HOLES (SHADED)



BASE PAD (CONCRETE OR OTHER SUITABLE MATERIAL)

ELEVATION ABOVE ANTICIPATED SNOW IS NECESSARY

Fig.7 RECOMMENDED ELEVATED INSTALLATION

3.9 FACTORY-PREFERRED TIE-DOWN METHOD

Step 1: Prior to installing clear pad of debris.

IMPORTANT

Then cement pad must be made of HVAC-approved materials and must be the proper thickness to accommodate fasteners.

Step 2: Center and level unit onto pad.

Step 3: Using L-shaped bracket to locate holes on concrete and drill pilot holes which is at least 1/4” deeper than fastener being used.

IMPORTANT

Self drilling screws to base pan should not exceed 3/8” long to avoid damaging coil.

Step 4: Using conventional practices to install brackets, tighten concrete fasteners and self-tapping screws (See Fig.8).

NOTE: 1. One bracket for each side. For extra stability, 2 brackets for each side.
2. Do not over-tighten the concrete fastener to avoid weakening the concrete.

IMPORTANT NOTE:

These instructions are intended to provide a method to tie-down system to cement slab as a securing procedure for high wind areas. It is recommended to check Local Codes for tie-down methods and protocols.

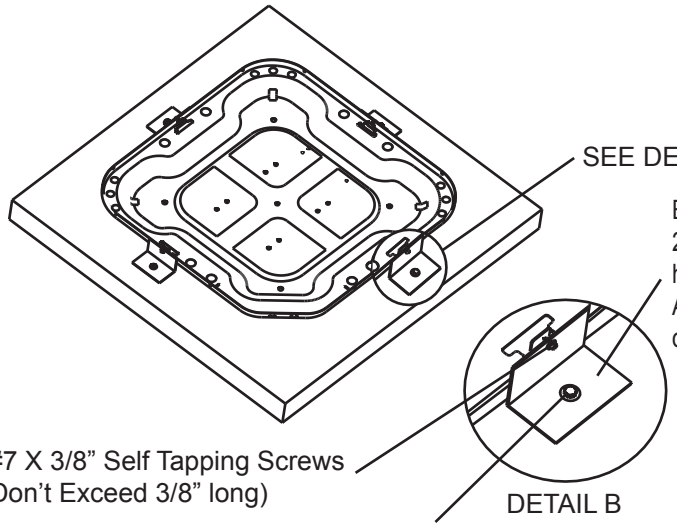

SEE DETAIL B
Brackets:
2” width, 1/16” thickness,
height as required.
Available from distributor
or in market place.
#7 X 3/8” Self Tapping Screws
(Don’t Exceed 3/8” long)
DETAIL B
1/4” X 1-1/2” Hex Washer Head Concrete Screws
(3/16” Pilot Hole Needed. Pilot Hole Should Be1/4” Deeper
Than The Fastener Embedment)

Fig.8 FACTORY-PREFERRED TIE-DOWN METHOD

3.10 REMOVING THE TOP PANEL AND MOTOR

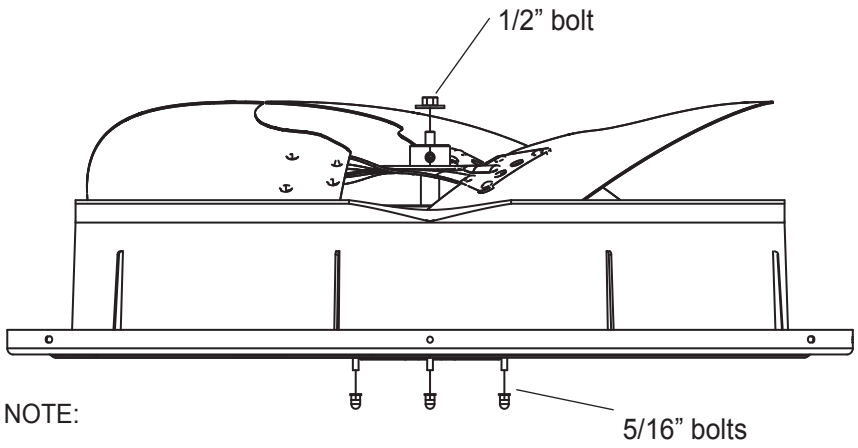


Fig. 9 COVER AND FAN

When motor requires changing follow the steps below:

Step 1: Go into electrical panel, disconnect motor power lines.

IMPORTANT NOTE

Disconnect main power to unit. Severe burns and electrical shock will occur if you do not disconnect main power.

Step 2: Remove cover (be careful of motor wires)

Step 3: Be sure to place fan cover unit on the ground as indicated in Fig. 9

IMPROTANT NOTE

Do not place or lean fan blades on ground or against surface.

Step 4: Remove fan motor by removing 5/16” bolts from cover.

Step 5: Remove fan blade from motor by removing 1/2” bolt and place fan on the ground.

Step 6: Reverse removal process to reinstall the fan and motor.

IMPROTANT NOTE

When connecting motor wires be sure to check motor direction.

4.0 ELECTRICAL CONNECTIONS

4.1 GENERAL INFORMATION & GROUNDING

Check the electrical supply to be sure that it meets the values specified on the unit nameplate and wiring label.

Power wiring, control (low voltage) wiring, disconnect switches and over current protection must be supplied by the installer. Wire size should be sized per requirements.

CAUTION

All field wiring must USE COPPER CONDUCTORS ONLY and be in accordance with Local, National Fire, Safety & Electrical Codes. This unit must be grounded with a separate ground wire in accordance with the above codes.

The complete connection diagram and schematic wiring label is located on the inside surface of the unit service access panel and this instruction.

4.2 FIELD CONNECTIONS POWER WIRING

1. Install the proper size weatherproof disconnect switch outdoors and within sight of the unit.
2. Remove the screws at the side of the corner cover. Slide corner cover down and remove from unit. See Fig. 10.
3. Run power wiring from the disconnect switch to the unit.
4. Route wires from disconnect through power wiring opening provided and into the unit control box.

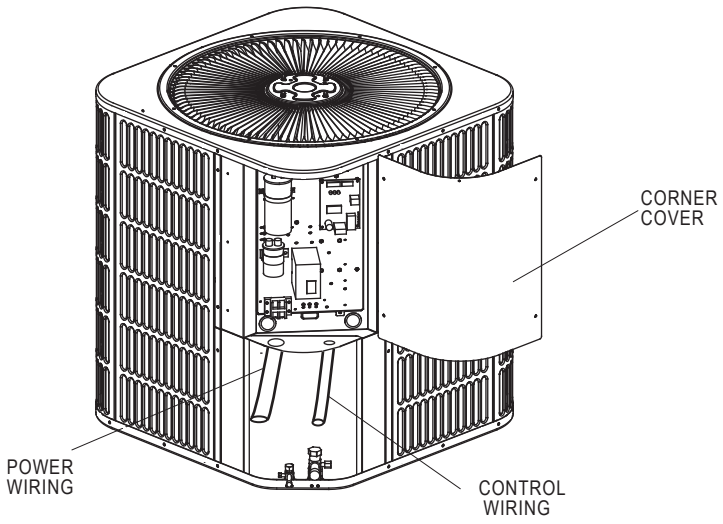


Fig.10 Typical Field Wiring

5. Install the proper size time-delay fuses or circuit breaker, and make the power supply connections.
6. Energize the crankcase heater if equipped to save time by preheating the compressor oil while the remaining installation is completed.

NOTE: When changing the motor, remove top cover first.

5.0 EVACUATION

It will be necessary to evacuate the system to 500 microns or less. If a leak is suspected, leak test with dry nitrogen to locate the leak. Repair the leak and test again. To verify that the system has no leaks, simply close the valve to the vacuum pump suction to isolate the pump and hold the system under vacuum. Watch the micron gauge for a few minutes. If the micron gauge indicates a steady and continuous rise, it's an indication of a leak. If the gauge shows a rise, then levels off after a few minutes and remains fairly constant, its an indication that the system is leak free but still contains moisture and may require further evacuation if the reading is above 500 microns.

6.0 INTERCONNECTING TUBING

6.1 VAPOR AND LIQUID LINES

Keep all lines sealed until connection is made.
Make connections at the indoor coil first.
Refer to Line Size Information in Tables 2 and 3 for correct size and multipliers to be used to determine capacity for various vapor line diameters and lengths of run. The losses due to the lines being exposed to outdoor conditions are not included.
The factory refrigerant charge in the outdoor unit is sufficient for 25 feet of interconnecting lines. The factory refrigerant charge in the outdoor unit is sufficient for the unit and 25 feet of standard size interconnecting liquid and vapor lines. For different lengths, adjust the charge as indicated below.
1/4” ± .3 oz. per foot
5/16” ± .4 oz. per foot
3/8” ± .6 oz. per foot
1/2” ± 1.2 oz. per foot

6.2 MAXIMUM LENGTH OF LINES

The maximum length of interconnecting line is 150 feet.
Always use the shortest length possible with a minimum number of bends. Additional compressor oil is not required for any length up to 150 feet.
NOTE: Excessively long refrigerant lines cause loss of equipment capacity.

6.3 VERTICAL SEPARATION

Keep the vertical separation to a minimum. Use the following guidelines when installing the unit:
1. DO NOT exceed the vertical separations as indicated on Table 3.
2. It is recommended to use the smallest liquid line size permitted to minimize system charge which will maximize compressor reliability.
3. Table 3 may be used for sizing horizontal runs.

7.0 SYSTEM OPERATION

7.1 COMPRESSOR CRANKCASE HEATER(CCH)

Refrigerant migration during the off cycle can result in a noisy start up. Add a crankcase heater to minimize refrigeration mirgration, and to help eliminate any start up noise or bearing “wash out”.
All heaters are located on the lower half of the compressor shell. Its purpose is to drive refrigerant from the compressor shell during long off cycles, thus preventing damage to the compressor during start-up.
At initial start-up or after extended shutdown periods, make sure the heater is energized for at least 12 hours before the compressor is started. (Disconnect switch on and wall thermostat off.)

TABLE 2: SUCTION LINE LENGTH/SIZE VS CAPACITY MULTIPLIER(R410A)

Unit Size		1 1/2 Ton	2 Ton	2 1/2 Ton	3 Ton	3 1/2 Ton	4 Ton	5 Ton
Suction Line Connection Size		3/4" I.D.	3/4" I.D.	3/4" I.D.	3/4" I.D.	3/4" I.D.	7/8" I.D.	7/8" I.D.
Suction Line Run－Feet		5/8 Opt.	5/8 Opt.	5/8 Opt.	5/8 Opt.	5/8 Opt.	3/4 Opt.	1 1/8 Opt.
		3/4* Std.	3/4* Std.	3/4* Std.	3/4* Std.	3/4* Std.	7/8* Std.	7/8* Std.
25'	Optional	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Standard	1.00	1.00	1.00	1.00	1.00	1.00	0.99
50'	Optional	0.97	0.97	0.97	0.97	0.98	0.98	0.99
	Standard	0.98	0.98	0.98	0.99	0.98	0.98	0.98
100'	Optional	0.94	0.94	0.94	0.94	0.95	0.95	0.98
	Standard	0.95	0.95	0.96	0.97	0.97	0.97	0.94
150'	Optional	0.90	0.90	0.90	0.90	0.91	0.92	0.97
	Standard	0.92	0.92	0.93	0.96	0.96	0.96	0.90

NOTES:
* Standard size
Using suction line larger than shown in chart will result in poor oil return and is not recommended.

TABLE 3 :LIQUID LINE SIZING (R-410A)

System Capacity	Line Size Connection Size (Inch I.D.)	Compressor Type	Line Size Connection And Line Size (Inch I.D.)	Liquid Line Size Outdoor unit above or below indoor coil (Heat Pumps Only)					
				Total Equivalent Length - Feet					
				25	50	75	100	125	150
				Maximum Vertical Separation - Feet					
1 1/2 Ton	3/8"	Scroll	1/4	25	40	25	9	N/A	N/A
			5/16	25	50	62	58	53	49
			3/8*	25	50	75	72	70	68
		Rotary	3/8*	25	30	30	27	24	20
2 Ton	3/8"	Scroll	1/4	23	N/A	N/A	N/A	N/A	N/A
			5/16	25	36	29	23	16	9
			3/8*	25	50	72	70	68	65
		Rotary	3/8*	25	30	30	24	20	15
2 1/2 Ton	3/8"	Scroll	1/4	25	N/A	N/A	N/A	N/A	N/A
			5/16	25	49	38	27	17	6
			3/8*	25	50	68	65	62	58
		Rotary	3/8*	25	30	30	22	17	10
3 Ton	3/8"	Scroll	5/16	25	50	37	22	7	N/A
			3/8*	25	50	68	63	58	53
3 1/2 Ton	3/8"	Scroll	5/16	25	23	4	N/A	N/A	N/A
			3/8*	25	50	43	36	30	24
4 Ton	3/8"	Scroll	3/8*	25	46	38	30	22	15
			1/2	25	50	56	55	53	52
5 Ton	3/8"	Scroll	3/8*	25	50	56	44	32	20
			1/2	25	50	75	81	79	76

NOTES:
* Standard line size
N/A Application not recommended.

7.2 PROTECTION FUNCTION INTRODUCTION

■ **Sensor T3 (condenser pipe temperature) and T4 (outdoor ambient temperature**)
When open-circuit, compressor, outdoor fan motor and reverse valve will be OFF.
When T4 < 5 °F, compressor will stop.
When T4 > 10.4 °F, compressor will restart.

■ **Discharge temperature protection (Heat pump only)**
When discharge temp. > 275 °F, compressor will stop.
When discharge temp. < 194 °F, compressor will restart.

■ **High perssure protection (Heat pump only)**
When high pressure > 638 PSIG, compressor and outdoor fan motor will stop.
When high pressure < 464 PSIG, compressor and outdoor fan motor will restart (3 minutes delay necessary).

■ **Low pressure protection (Heat pump only)**
Low pressure < 21 PSIG, compressor and outdoor fan motor will stop.
Low pressure > 44 PSIG, compressor and outdoor fan motor will restart (3 minutes delay necessary).

In stand-by status, the compressor will not start in low pressure protection.
Within 30 mins, if 4 protection cycles occurs, system will restore after power cut-down.

8.0 THREE PHASE COMPRESSOR ROTATION

⚠ CAUTION
Use care when handling scroll compressors. Dome temperatures can be hot.

Three phase scrolls are power phase dependent and can compress in more than one direction.
Verify proper rotation for three phase compressors by ensuring the suction pressure drops and discharge pressure rises when the compressor is energized.

NOTE: When operated in reverse, a three phase scroll compressors is noisier and its current draw is substantially reduced compared to marked rated values, please check the compressor wiring; when connected to the power but the compressor does not work, the LED indicator on the PCB board of the condensing unit will flash rapidly. To correct, exchange any two of the power input terminals among the L1, L2 or L3 and this should correct problem.

■ When the power code connection is error, the LED indicator flashes rapidly.

■ When the system is in stand -by mode, the LED indicator flashes slowly.

■ When the system is working in normal mode, the LED indicator will stay lite.

9.CHECKING REFRIGERANT CHARGE

Charge for all systems should be checked against the Charging Chart inside the access panel cover.
IMPORTANT:Do not operate the compressor without charge in system. Addition of R-410A will raise pressures (vapor, liquid and discharge).
If adding R-410A raises both vapor pressure and temperature, the unit is over-charged.
IMPORTANT: Use industry-approved charging methods to ensure proper system charge.

9.1 CHARGING BY LIQUID PRESSURE

The liquid pressure method is used for charging systems in the cooling and heating mode. The service port on the liquid (small valve) and suction (large valve) is used for this purpose.

Verify that the outdoor unit is running and the indoor air mover is delivering the maximum airflow for this system size. Read and record the outdoor ambient temperature. Read and record the liquid and suction pressures at the ports on the liquid and suction valves.

If refrigerant lines are sized using the nameplate charge, the correct liquid pressure is found at the intersection of the suction pressure and the outdoor ambient.

1. Remove refrigerant charge if the liquid pressure is above the chart value.
2. Add refrigerant charge if the liquid pressure is below the chart value.

9.2 CHARGING BY WEIGHT

For a new installation, evacuation of interconnecting tubing and indoor coil is adequate; otherwise, evacuate the entire system. Note that charge value includes charge required for 15 ft. of standard size interconnecting liquid line. Calculate actual charge required with installed liquid line size and length using:

1/4" O.D. = .3 oz./ft.
5/16" O.D. = .4 oz./ft
3/8" O.D. = .6 oz./ft
1/2" O.D. = 1.2 oz./ft

With an accurate scale (+/-1 oz.) or volumetric charging device, adjust charge difference between that shown on the unit data plate and that calculated for the new system Installation. if the entire system has been evacuated, add the total calculated charge.

9.3 FINAL LEAK TESTING

After the unit has been properly evacuated and charged, a halogen leak detector should be used to detect leaks in the system. All piping within the condensing unit, evaporator, and interconnecting tubing should be checked for leaks. If a leak is detected, the refrigerant should be recovered before repairing the leak. The Clean Air Act prohibits releasing refrigerant into the atmosphere.

10.0 INSTRUCTING THE OWNER

Assist owner with processing Warranty cards and/or online registration. Review Owners Guide and provide a copy to the ower and guidance on proper operation and maintenance. Instruct the owner or the operator how to start, stop and adjust temperature setting. The installer should instruct the owner on proper operation and maintenance of all other system components.

10.1 MAINTENANCE

1. Dirt should not be allowed to accumulate on the outdoor coils or other parts in the air circuit. Clean as often as necessary to keep the unit clean. Use a brush, vacuum cleaner attachment, or other suitable means.
2. The outdoor fan motor is permanently lubricated and does not require periodic oiling.
3. If the coil needs to be cleaned, it should be washed with Calgon Coilclean (mix one part Coilclean to seven parts water). Allow solution to remain on coil for 30 minutes before rinsing with clean water. Solution should not be permitted to come in contact with painted surfaces.
4. Refer to the furnace or air handler instructions for filter and blower motor maintenance.
5. The indoor coil and drain pan should be inspected and cleaned regularly to assure proper drainage.

CAUTION

It is unlawful to knowingly vent, release or discharge refrigerant into the open air during repair, service, maintenance or the final disposal of this unit. When the system is functioning properly and the owner has been fully instructed, secure the owner's approval.

11.0 WIRING DIAGRAM

CAUTION

These units must be wired and installed in accordance with all National and Local Safety Codes.

CC COMPRESSOR CONTACTOR
COMP COMPRESSOR
RC 1 RUN CAPACITOR 1
RC 2 RUN CAPACITOR 2

LINE VOLTAGE
FACTORY STANDARD
FIELD INSTALLED
FACTORY OPTIONAL

LOW VOLTAGE
FACTORY STANDARD
FIELD INSTALLED
FACTORY OPTIONAL
USE COPPER CONDUCTORS ONLY

WARNING :
CABINET MUST BE PERMANMENTLY GROUNDED AND ALL WIRING TO CONFORM TO I.E.C, N.E.C, C.E.C, C.L.C, AND LOCAL CODES AS APPLICABLE REPLACEMENT WIRE MUST BE THE SAME GAUGE AND INSULATION TYPE AS ORIGINAL WIRE.

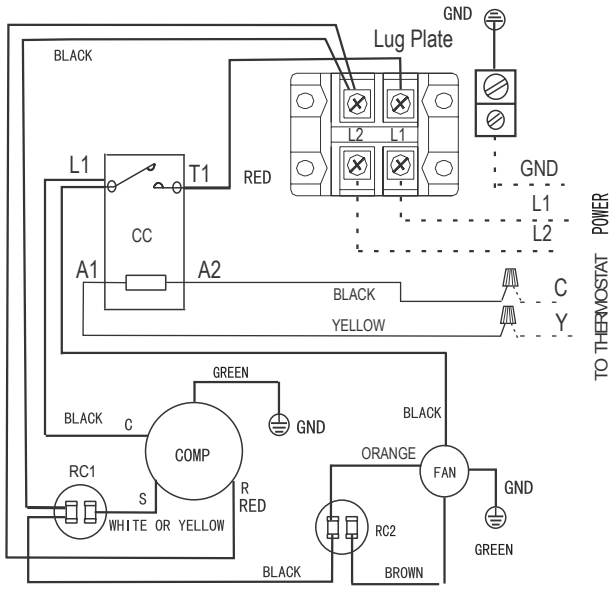


Fig.11 Outdoor Unit Wiring Diagram for A/C Systems(208/230V 1P 60Hz).

CC COMPRESSOR CONTACTOR
COMP COMPRESSOR
PCB PCB CONTROL
T4 10KΩ RESISTANCE
T3 10KΩ RESISTANCE
OFM OUTDOOR FAN MOTOR
RC RUN CAPACITOR
GND GROUND CHASSIS

LINE VOLTAGE
FACTORY STANDARD
FIELD INSTALLED
FACTORY OPTIONAL

LOW VOLTAGE
FACTORY STANDARD
FIELD INSTALLED
FACTORY OPTIONAL
USE COPPER CONDUCTORS ONLY

WARNING:
CABINET MUST BE PERMANMENTLY GROUNDED AND ALL WIRING TO CONFORM TO I.E.C, N.E.C, C.E.C, C.L.C, AND LOCAL CODES AS APPLICABLE REPLACEMENT WIRE MUST BE THE SAME GAUGE AND INSULATION TYPE AS ORIGINAL WIRE.

CAUTION

This unit is available in WYE mode only.

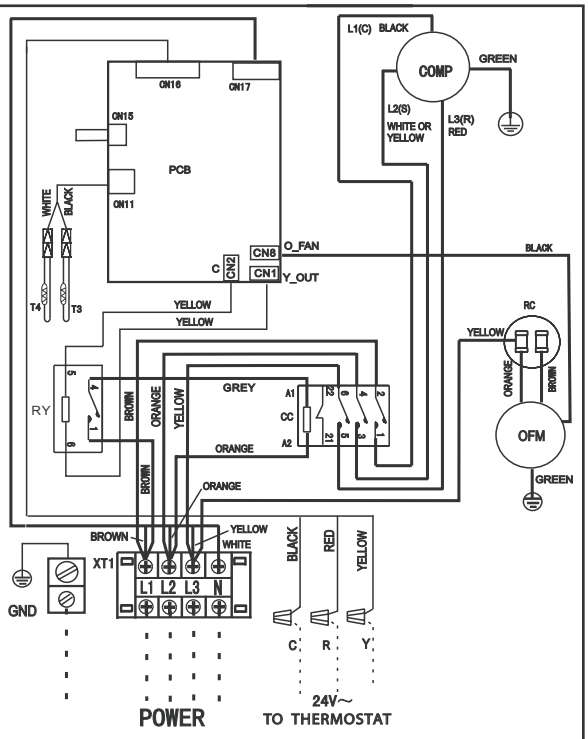


Fig.12 Outdoor Unit Wiring Diagram for A/C Systems(208/230V 3P 60Hz).

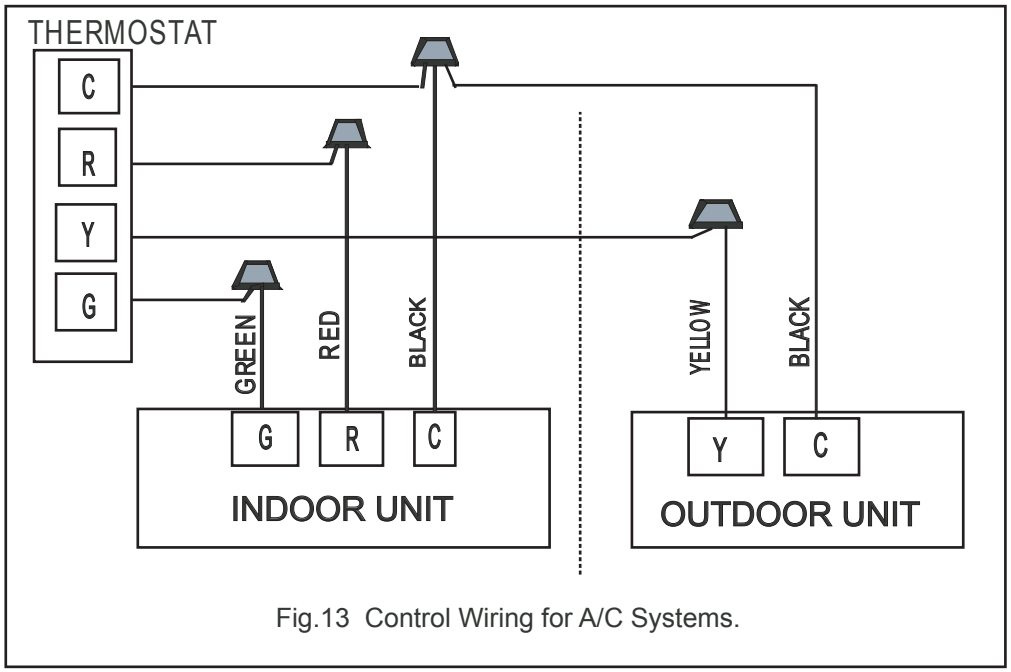


Fig.13 Control Wiring for A/C Systems.

Suggestion: When choosing a thermostat, choose K5R-25B or a non-programmable electric thermostat series such as Honeywell (TH5220D). Please refer to thermostat electrical manual for wiring schematic.

TABLE 4: Wiring Gauge for A/C Systems.

Model(Btu/h)		18000/24000	30000/36000	42000	48000/60000	60000
Power Supply		208/230V 1Ph 60Hz				208/230V 3Ph 60Hz
Input Current Fuse Amps		15/20	30/30	40	40/50	30
Outdoor Unit Power Line	Line Quantity	3	3	3	3	5
	Line Diameter (AWG)	14	12	12	10	12
Outdoor-Indoor Signal Line	Line Quantity	2	2	2	2	5
	Line Diameter (AWG)	18	18	18	18	16
Thermostat Signal Line	Line Quantity	4	4	4	4	5
	Line Diameter (AWG)	18	18	18	18	16

All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

CC COMPRESSOR CONTACTOR
CCH CRANKCASE HEATER
COMP COMPRESSOR
DFC DEFROST CONTROL
T4 AMBIENT TEMPERATURE
T3 PIPE TEMPERATURE
HPC HIGHT PRESSURE CUT-OUT CONTROL
LPC LOW PRESSURE CUT-OUT CONTROL
OFM OUTDOOR FAN MOTOR
RC 1 RUN CAPACITOR 1
RC 2 RUN CAPACITOR 2
RV REVERSING VALVE
GND GROUND CHASSIS
HGS HOT GAS SENSOR

LINE VOLTAGE
FACTORY STANDARD ——————
FIELD INSTALLED - - - - - - -
FACTORY OPTIONAL —·—·—·—

LOW VOLTAGE
FACTORY STANDARD ——————
FIELD INSTALLED · · · · · · · · · · · ·
FACTORY OPTIONAL — — — — —
USE COPPER CONDUCTORS ONLY

WARNING :
CABINET MUST BE PERMANMENTLY GROUNDED AND ALL WIRING TO CONFORM TO I.E.C, N.E.C, C.E.C, C.L.C, AND LOCAL CODES AS APPLICABLE REPLACEMENT WIRE MUST BE THE SAME GAUGE AND INSULATION TYPE AS ORIGINAL WIRE.

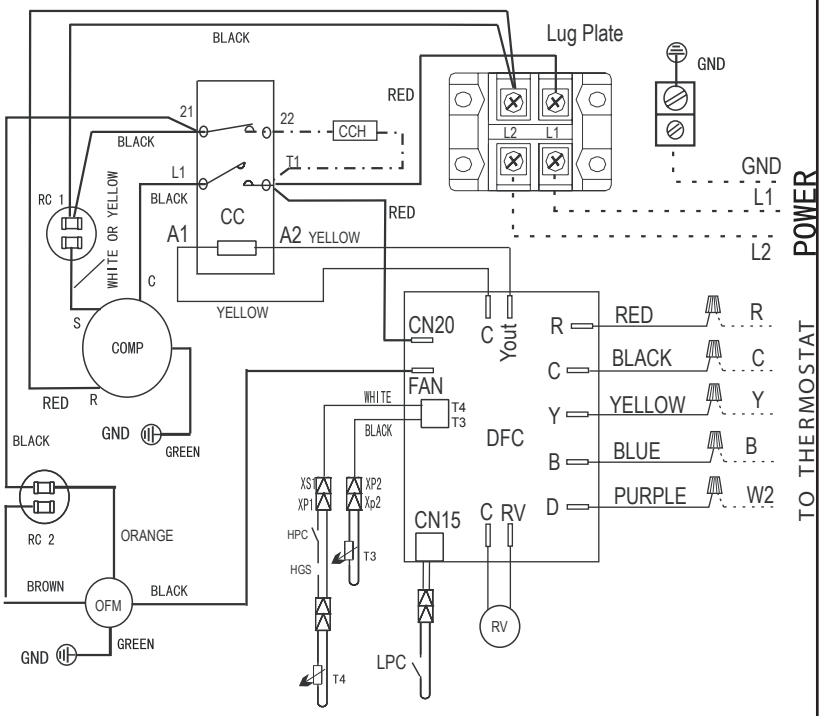


Fig.14 Outdoor Unit Wiring Diagram for H/P Systems(208/230V 1P 60Hz).

CC COMPRESSOR CONTACTOR
CCH CRANKCASE HEATER
COMP COMPRESSOR
DFC DEFROST CONTROL
T4 AMBIENT TEMPERATURE
T3 PIPE TEMPERATURE
HPC HIGH PRESSURE CUT-OUT CONTROL
LPC LOW PRESSURE CUT-OUT CONTROL
OFM OUTDOOR FAN MOTOR
RC RUN CAPACITOR
RV REVERSING VALVE
GND GROUND CHASSIS
HGS HOT GAS SENSOR

LINE VOLTAGE
FACTORY STANDARD ——————
FIELD INSTALLED - - - - - - -
FACTORY OPTIONAL —·—·—·—

LOW VOLTAGE
FACTORY STANDARD ——————
FIELD INSTALLED · · · · · · · · · · · · · ·
FACTORY OPTIONAL —·—·—·—·—·—
USE COPPER CONDUCTORS ONLY

WARNING:
CABINET MUST BE PERMANMENTLY GROUNDED AND ALL WIRING TO CONFORM TO I.E.C, N.E.C, C.E.C, C.L.C, AND LOCAL CODES AS APPLICABLE REPLACEMENT WIRE MUST BE THE SAME GAUGE AND INSULATION TYPE AS ORIGINAL WIRE.

CAUTION

This unit is available in WYE mode only.

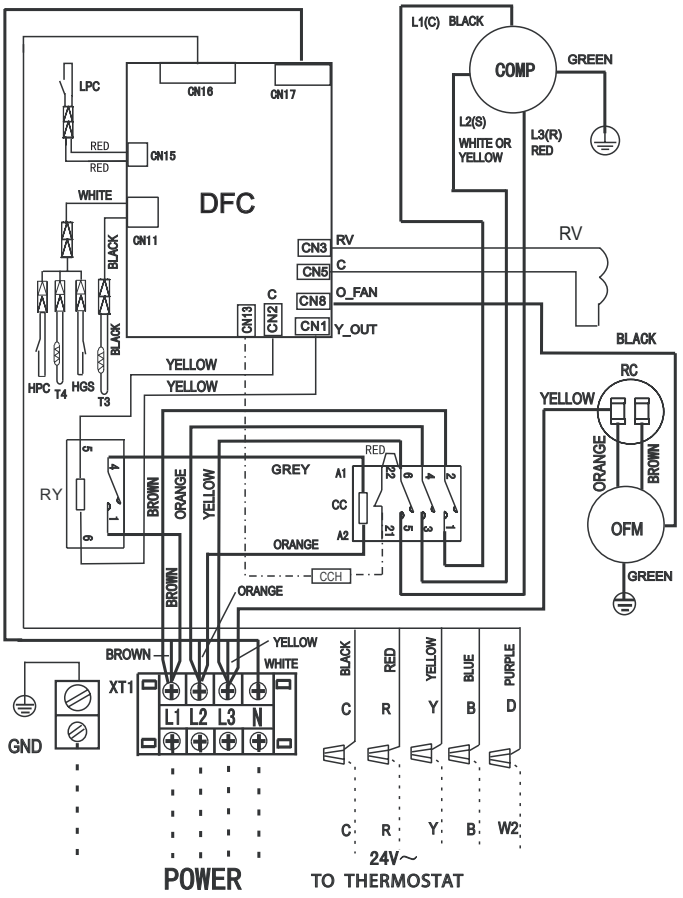


Fig.15 Outdoor Unit Wiring Diagram for H/P Systems(208/230V 3P 60Hz).

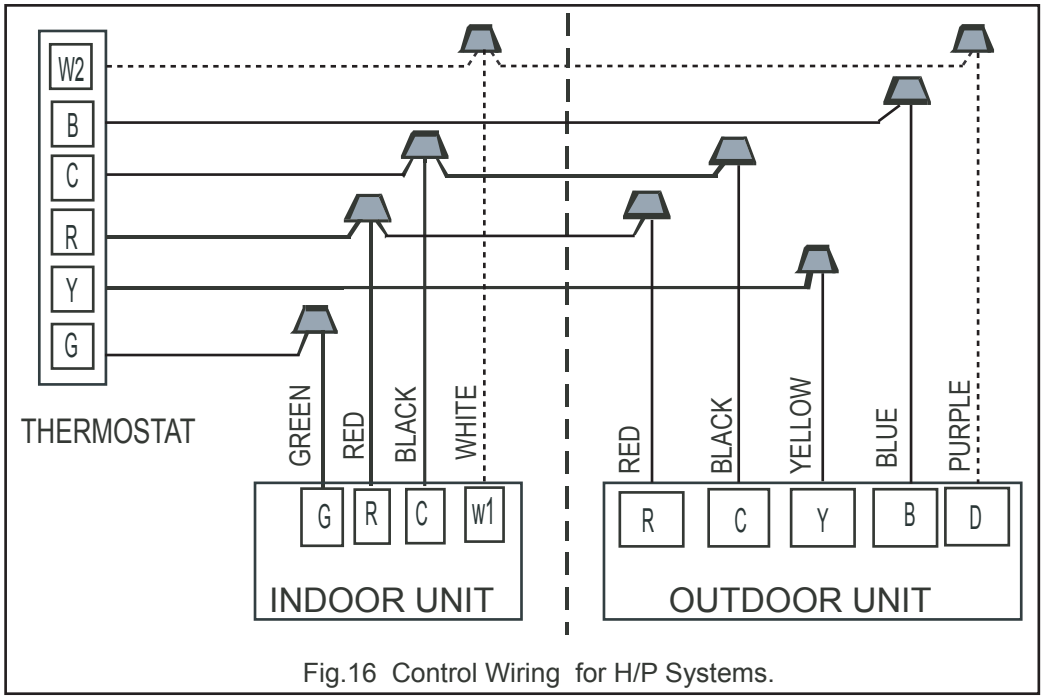


Fig.16 Control Wiring for H/P Systems.

Suggestion: When choosing a thermostat, choose K5R-25B or a non-programmable electric thermostat series such as Honeywell (TH5220D). Broken lines means H/P system with electric heating. Please refer to thermostat electrical manual for wiring schematic.

TABLE 5: Wiring Gauge for H/P Systems.

Model(Btu/h)		18000/24000	30000/36000	42000	48000/60000	60000
Power Supply		208/230V 1Ph 60Hz				208/230V 3Ph 60Hz
Input Current Fuse Amps		15/20	30/30	40	40/50	30
Outdoor Unit Power Line	Line Quantity	3	3	3	3	5
	Line Diameter (AWG)	14	12	12	10	12
Outdoor-Indoor Signal Line	Line Quantity	5	5	5	5	5
	Line Diameter (AWG)	18	18	18	18	16
Thermostat Signal Line	Line Quantity	5	5	5	5	5
	Line Diameter (AWG)	18	18	18	18	16

All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.